No. 8800041

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pennsylvania Agricultural Experiment Station and USDA–ARS

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S), AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BARLEY

'Pennco'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D. C. *this* 30th *day of* August *in the year of our Lord one thousand nine hundred and* ninety-one.

Attest:

Kenneth B. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Ed Madigan
Secretary of Agriculture

APPROVAL EXPIRES 2-28-88

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) Pennsylvania State University, Agricultural Experiment Station and Agricultural Research Service, USDA

2. TEMPORARY DESIGNATION: PA8346-7

3. VARIETY NAME: Pennco

4. ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*: 229 Agricultural Administration Building, University Park, PA 16802

5. PHONE *(Include area code)*: 814/865-5410

FOR OFFICIAL USE ONLY

PVPO NUMBER: 8800041

6. GENUS AND SPECIES NAME: Hordeum vulgare

7. FAMILY NAME *(Botanical)*: Gramineae

FILING
DATE: December 16, 1987
TIME: 1:30 ☐ A.M. ☑ P.M.

8. KIND NAME: Barley, Winter

9. DATE OF DETERMINATION: November 20, 1985

FEES RECEIVED
AMOUNT FOR FILING: $ 1800 00
DATE: December 16, 1987
AMOUNT FOR CERTIFICATE: $ 200 00
DATE: Aug. 7, 1991

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*: Land-Grant University and Federal Agency

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Charles R. Krueger, Associate Dean for Research
The Pennsylvania State University
229 Agricultural Administration Building
University Park, PA 16802
PHONE *(Include area code)*: 814/865-5410

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED
- a. ☒ Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- b. ☒ Exhibit B, Novelty Statement.
- c. ☒ Exhibit C, Objective Description of Variety *(Request form from Plant Variety Protection Office.)*
- d. ☒ Exhibit D, Additional Description of Variety.
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)* ☒ Yes *(If "Yes," answer items 16 and 17 below)* ☐ No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☒ Yes ☐ No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? ☒ Foundation ☒ Registered ☒ Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ Yes *(If "Yes," give date)*
☒ No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES ?
☒ Yes *(If "Yes," give names of countries and dates)*: United States, September 1987
☐ No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT: Charles R. Krueger — DATE: November 25, 1987

SIGNATURE OF APPLICANT: T. B. Kinney — DATE: DEC 9 1987

FORM LS-470 (3-86) *Edition of 7-84 obsolete*

1

EXHIBIT-A, Origin and Breeding History of 'Pennco' Winter Barley

Pedigree: Pennco was derived from a bulk population. The pedigree is complex. One parental line was from a composite bulk population of the crosses. CI 9623/'Rapidan', CI 9658/'Hanover', BYDV resistant 'Atlas'/Rapidan, CI 9708/Rapidan. The pedigree of the other parental line was 'Harrison'/3/'Cebada Capa'/'Wong'//awnleted 'Hudson' selection.

The bulk breeding method was used to develop 'Pennco' barley and the initial selection was made in the F_5 generation. 'Pennco' was derived from row 8033-0727 of the 1980 Headrow Nursery at the Pennsylvania State University. This selection was evaluated and advanced in a replicated row nursery on the Agronomy Farm in 1981. 'Pennco' was grown in replicated yield trials in 1982-85 in Lancaster County, Pennsylvania, and in 1984-85 in Centre County, Pennsylvania. It was grown in the 48th Uniform Winter Hardiness Barley Nursery at 32 locations during 1983-84. 'Pennco' was also evaluated at three locations in each of the states of Virginia and Maryland in 1985.

Pennco is uniform and stable within commercially acceptable limits. Occasional tall variants appear that are about one spike length taller than typical plants. Otherwise these variants resemble 'Pennco'. Fully awned variants appear at a very low frequency. Frequency of either of these variants is less than one half of one percent. Pennco can be and has been maintained and reproduced through seed without changing its characteristics.

EXHIBIT-B, Novelty Statement.

'Pennco' is a six-row, winter barley with an awnleted compact spike and most nearly resembles 'Maury' and 'Pennrad'. Winterhardiness, plant height, and bushel test weight are comparable to 'Maury'. 'Pennco' has outstanding early spring green color compared to other varieties currently grown in the area. Differences include, although are not necessarily restricted to the following:

Pennco compared to Pennrad:

1. Pennco is about 5 to 8 inches (20 cm) shorter (Tables 1 and 2).
2. Pennco heads about 4 days earlier.
3. Pennco has better resistance to leaf rust and net blotch (Tables 1 and 2).
4. Pennco has better lodging resistance (Table 1).
5. Grain yield of Pennco is about 43 percent higher in Lancaster County, Pa., and 16 percent higher in Centre County, Pa. (Tables 1 and 2).

Pennco compared to Maury:

1. Pennco heads about 3 days earlier.
2. Pennco has better lodging resistance (Table 1).
3. Grain yield of Pennco is about 17 percent higher in Lancaster County, Pa., and 7 percent in Centre County, Pa. (Tables 1 and 2).
4. Pennco has better barley yellow dwarf virus resistance (Table 3).

EXHIBIT B:

TABLE 1. Performance of Pennco winter barley in Lancaster County, Pennsylvania.

YIELD (bu/A)

Cultivar	1982	1983	1984	1985	1985	1985	$\bar{Y}$
Pennco	91	139	103	135	130	143	124
Maury	83	106	84	117	119	124	106
Pennrad	78	86	81	109	89	78	87
LSD (.05)	10	15	13	23	11	18	

PLANT HEIGHT (in)

Pennco	33	40	34	36	39		36
Maury	35	41	35	39	36		37
Pennrad	39	48	41	45	48		44
LSD (.05)	2	3	2	3			

LODGING (%)

Pennco	61	16	--	69	--		49
Maury	77	24	--	78	--		60
Pennrad	93	59	--	99	--		84
LSD (.05)	30	43		34			

EXHIBIT B:

TABLE 1. Performance of Pennco in Lancaster County, Pennsylvania (cont.).

Cultivar	1982	1985	1985	1985	$\bar{Y}$ (%)
NET BLOTCH (% for 1985, rating scale for 1982 where 0 = none, 3 = high)					
Pennco	0.5	7.6	2.1	1.8	3.8
Maury	1.5	3.0	4.3	17.5	8.3
Pennrad	1.4	8.5	10.7	7.9	9.0
LSD (.05)	0.7	18.5	4.6	10.6	
LEAF RUST (%)					
Pennco		20	0.5	0.6	7.0
Maury		7	1.3	8.6	5.6
Pennrad		33	2.5	16.5	17.3
LSD (.05)		34	2.1	14.4	

EXHIBIT B:

TABLE 2. Performance of Pennco winter barley in Centre County, Pennsylvania.

YIELD (bu/A)

Cultivar	1984	1985	1985	$\bar{Y}$
Pennco	93	102	102	99.0
Maury	103	84	88	92.7
Pennrad	86	82	89	85.7
LSD (.05)	15	13	15	

PLANT HEIGHT (in)

Pennco	37	31	30	33
Maury	39	32	32	34
Pennrad	42	37	36	38
LSD (.05)	2	2	3	

DISEASE

Cultivar	Net blotch (%)	
Pennco	6	12.9
Maury	13	20.6
Pennrad	18	23.0
LSD (.05)	9	13.4

EXHIBIT B:

TABLE 3. Effect of infection by barley yellow dwarf virus (BYDV) PAV isolate on Pennco and Maury barley cultivars.

Cultivar and BYDV treatment	Grain yield	
	Test 1	Test 2
	(g plot^{-1})	
Pennco		
Control	97 a	128 a
PAV	111 a	127 a
Maury		
Control	102 a	91 a
PAV	65 b	56 b

Values in each column within a cultivar followed by the same letter are not significantly different at P = 0.05 based on the least significant difference procedure.

FORM APPROVED: OMB NO. 40-R3822

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Barley)

OBJECTIVE DESCRIPTION OF VARIETY

BARLEY *(HORDEUM VULGARE)*

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S): Pennsylvania Agricultural Experiment Station, Pennsylvania State University

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*: Rm. 229 Agricultural Administration Bl. University Park, PA 16802

FOR OFFICIAL USE ONLY

PVPO NUMBER: 8800041

VARIETY NAME OR TEMPORARY DESIGNATION: Pennco

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (i.e. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. GROWTH HABIT:

[3] 1 = SPRING 2 = FACULTATIVE WINTER 3 = WINTER

[2] Early Growth: 1 = PROSTRATE 2 = SEMIPROSTRATE 3 = ERECT

2. MATURITY (50% Flowering):

[2] 1 = EARLY (~~California Mariout~~) Barsoy 2 = MIDSEASON ~~Bonanza~~ Maury 3 = LATE ~~Excelsior~~ Post

[2] No. of days *Earlier* than ..... [2]
[3] No. of days *Later* than ..... [1]

1 = ~~BONANZA~~ Barsoy 2 = ~~CALIFORNIA MARIOUT~~ Maury 3 = ~~CONQUEST~~ Pennrad 4 = ~~DICKSON~~ Post
5 = PIROLINE 6 = PRIMUS 7 = UNITAN

3. PLANT HEIGHT (From soil level to top of head):

[3] 1 = SEMIDWARF 2 = SHORT (California Mariout) 3 = MEDIUM TALL (~~Excel~~) Maury 4 = TALL (~~Conquest~~) Pennrad

[2 0] Cm. *Shorter* than ..... [3]
[0 1] Cm. *Taller* than ..... [1]

1 = ~~BONANZA~~ Barsoy 2 = ~~CALIFORNIA MARIOUT~~ Maury 3 = ~~CONQUEST~~ Pennrad 4 = ~~DICKSON~~ Post
5 = PIROLINE 6 = PRIMUS 7 = UNITAN

4. STEM:

[3] Exertion *(Flag to spike at maturity)*: 1 = 0 - 3 cm. 2 = 3 - 10 cm. 3 = 10 - 15 cm.

[ ] Anthocyanin: 1 = ABSENT 2 = PRESENT

[0 3] NO. OF NODES (Originating from node above ground)

[1] Collar Shape: 1 = CLOSED 2 = V-SHAPED 3 = OPEN 4 = MODIFIED CLOSED OR OPEN

[1] Shape of Neck: 1 = STRAIGHT 2 = SNAKY 3 = OTHER (Specify) _____

5. LEAF:

[ ] Basal leaf sheath *(seedling)*: 1 = GLABROUS 2 = PUBESCENT

[2] Position of flag leaf *(at boot stage)*: 1 = DROOPING 2 = UPRIGHT

[2] Waxiness: 1 = ABSENT (Glossy) 2 = SLIGHTLY WAXY 3 = WAXY

[1 4] MM. WIDTH (First leaf below flag leaf)

[1 5] CM. LENGTH (First leaf below flag leaf)

[2] Anthocyanin in leaf sheath: 1 = ABSENT 2 = PRESENT

6. HEAD:

[2] Type: 1 = TWO-ROWED 2 = SIX-ROWED

[3] Density: 1 = LAX 2 = ERECT (Not dense) 3 = ERECT (Dense)

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) Compact

[2] Waxiness: 1 = ABSENT (Glossy) 2 = SLIGHTLY WAXY 3 = WAXY

[1] Lateral Kernels Overlap: 1 = NONE 2 = AT TIP 3 = 1/4 - 1/2 OF HEAD

[3] Rachis *(Hair on edge)*: 1 = LACKING 2 = FEW 3 = COVERED

7. GLUME:

[2] Length: 1 = 1/3 OF LEMMA 2 = 1/2 OF LEMMA 3 = MORE THAN 1/2 OF LEMMA

[3] Hairs: 1 = NONE 2 = SHORT 3 = LONG

[3] Hair covering: 1 = NONE 2 = RESTRICTED TO MIDDLE 3 = CONFINED TO BAND 4 = COMPLETELY COVERED

[3] Awns: 1 = LESS THAN EQUAL TO LENGTH OF GLUMES 2 = EQUAL TO LENGTH OF GLUMES 3 = MORE THAN EQUAL TO LENGTH OF GLUMES

[3] Awn Surface: 1 = SMOOTH 2 = SEMISMOOTH 3 = ROUGH

8800041

8. LEMMA:

[2] Awn: 1 = AWNLESS 2 = AWNLETS ON CENTRAL ROWS, AWNLESS ON LATERAL ROWS
3 = SHORT ON CENTRAL ROWS, AWNLETS ON LATERAL ROWS 4 = SHORT (less than equal to length of spike)
5 = LONG (longer than spike) 6 = HOODED

[3] Awn Surface: 0 = AWNLESS 1 = SMOOTH 2 = SEMISMOOTH 3 = ROUGH

[2] Teeth: 1 = ABSENT 2 = FEW 3 = NUMEROUS

[1] Hair: 1 = ABSENT 2 = PRESENT

[1] Shape of base: 1 = DEPRESSION 2 = SLIGHT CREASE 3 = TRANSVERSE CREASE

[2] Rachilla Hairs: 1 = SHORT 2 = LONG

9. STIGMA:

[ ] Hairs: 1 = FEW 2 = MANY

10. SEED:

[2] Type: 1 = NAKED 2 = COVERED

[1] Hairs on Ventral Furrow: 1 = ABSENT 2 = PRESENT

[3] Length: 1 = SHORT (8.0 mm.) 2 = SHORT TO MIDLONG (7.5 - 9.0 mm.) 3 = MIDLONG (8.5 - 9.5 mm.)
4 = MIDLONG TO LONG (9.0 - 10.5 mm.) 5 = LONG (10.0 mm.)

[3] Wrinkling of hull: 1 = NAKED 2 = SLIGHTLY WRINKLED 3 = SEMIWRINKLED 4 = WRINKLED

[1] Aleurone Color: 1 = COLORLESS (White or Yellow) 2 = BLUE

[ ][ ] PERCENT ABORTIVE

[3][7] GMS. PER 1000 SEEDS

11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SEPTORIA	[1] NET BLOTCH	[1] SPOT BLOTCH	[2] POWDERY MILDEW
[1] LOOSE SMUT	[0] BACTERIAL BLIGHT	[0] COVERED SMUT	[0] FALSE LOOSE SMUT
[0] STEM RUST	[1] LEAF RUST	[0] SCAB	[2] SCALD
[0] AY	[0] BSMV	[1] BYDV	[0] OTHER (Specify)

12. INSECT: (0 = Not tested, 1 = Susceptible, 2 = Resistant)

[0] GREEN BUG	[0] ENGLISH GRAIN APHID	[0] CHINCH BUG	[0] ARMYWORM
[0] GRASS HOPPERS	[0] CEREAL LEAF BETTLE	[0] OTHER (Specify) _____	

HESSIAN FLY RACES: [0] GP [0] A [0] B [0] C [0] D [0] E [0] F [0] G

13. CHEMICAL (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] DDT [0] OTHER (Specify) _____

14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Maury	Seed size	Maury
Leaf size		Coleoptile elongation	
Leaf color		Seedling pigmentation	
Leaf carriage	Wysor		

REFERENCES: The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

1. Wiebe, G. A., and D. A. Reid, 1961, Classification of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Dept. of Agriculture.
2. Reid, D. A., and G. A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Dept. of Agriculture. pp. 61 - 84.
3. Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

EXHIBIT-D, Additional Description of 'Pennco'

Performance data of 'Pennco' and other winter barley varieties are given in Tables 1, 2, 3, and 4 for Lancaster County, Pennsylvania, Centre County, Pennsylvania, Virginia, and Maryland, respectively. In Lancaster County, Pennsylvania, yield of 'Pennco' exceeded that of 'Maury' and 'Pennrad' by about 17 and 43 percent, respectively (Table 1). In seasons when lodging was present, it exhibited better standability than either 'Maury', 'Pennrad', or 'Barsoy'. In Centre County, Pennsylvania, yield of 'Pennco' exceeded that of 'Maury' and 'Pennrad by about 7 and 16 percent, respectively (Table 2).

In a season and location where powdery mildew was severe, 'Pennco' exhibited a trace of powdery mildew while 'Barsoy' and 'Anson' were very susceptible (Table 3). Although 'Pennco' does not exhibit resistance to some of the other diseases, the disease levels are usually lower or comparable to other varieties (Tables 1, 2, and 3).

TABLE 1.

Performance of PA8346-7 in Lancaster County, Pennsylvania (PA8346-7 = Pennco).

YIELD (bu/A)	1982	1983	1984	1985	1985	1985	$\bar{Y}$
PA8346-7 +	91	139	103	135	130	143	124
Maury	83	106	84	117	119	124	106
Pennrad	78	86	81	109	89	78	87
Barsoy	71	97	86	96	95	--	89
Post	--	--	--	113	115	--	114
LSD (.05)	10	15	13	23	11	18	

BUSHEL WEIGHT (lb/bu)							
PA8346-7 +	34.4	43.3	45.9	47.7	47.4	44.1	43.8
Maury	31.0	44.5	46.0	48.7	48.2	46.4	44.1
Pennrad	33.4	46.8	46.1	49.3	44.5	41.6	43.5
Barsoy	42.3	44.8	47.8	46.3	48.3	--	45.9
Post	--	--	--	48.7	51.7		49.3
LSD (.05)	3.8	1.3	0.5	2.0	1.8	2.0	

PLANT HEIGHT (in)							
PA8346-7 +	33	40	34	36	39		36
Maury	35	41	35	39	36		37
Pennrad	39	48	41	45	48		44
Barsoy	33	43	31	39	--		37
Post	--	--	--	39	--		39
LSD (.05)	2	3	2	3			

LODGING (%)							
PA8346-7 +	61	16		69			49
Maury	77	24		78			60
Pennrad	93	59		99			84
Barsoy	60	94		93			82
Post				11			
LSD (.05)	30	43		34			

+ PA8346-7 is Pennco.

Table 1. (cont.)

Performance of PA8346-7 in Lancaster County, Pennsylvania (cont.).

NET BLOTCH (% for 1985, rating scale for 1982 where 0=none , 3=high)

	1982	1985	1985	1985	Y (%)
PA8346-7+	0.5	7.6	2.1	1.8	3.8
Maury	1.5	3.0	4.3	17.5	8.3
Pennrad	1.4	8.5	10.7	7.9	9.0
Barsoy	0.8	0.0	9.0	--	--
Post	--	0.6	0.5	--	--
LSD (.05)	0.7	18.5	4.6	10.6	

RUST

PA8346-7+	20	0.5	0.6	7.0
Maury	7	1.3	8.6	5.6
Pennrad	33	2.5	16.5	17.3
Barsoy	48	7.3	--	
Post	46	1.6	--	
LSD (.05)	34	2.1	14.4	

POWDERY MILDEW (Rating scale in 1982 where 0=none and 3=high and % in 1985)

PA8346-7+	0.0	0.1
Maury	0.3	0.1
Pennrad	0.0	0.1
Barsoy	0.9	0.1
Post	--	0.0
LSD (.05)	0.6	1.5

SPOT BLOTCH (Rating scale where 0=none and 3=high)

PA8346-7+	0.4
Maury	0.3
Pennrad	1.4
Barsoy	0.6
LSD (.05)	0.7

+ PA8346-7 is Pennco.

TABLE 2.

Performance of PA8346-7 in Centre County, Pennsylvania (PA8346-7 = Pennco).

YIELD (bu/A)

	1984	1985	1985	$\bar{Y}$
PA8346-7+	93	102	102	99.0
Maury	103	84	88	92.7
Pennrad	86	82	89	85.7
Barsoy	90	73	--	81.5
Post	--	89	--	--
LSD (.05)	15	13	15	

DATE HEADED

	1985
PA8346-7+	May 12
Maury	May 15
Pennrad	May 16
Barsoy	May 10
Post	May 15

BUSHEL WEIGHT (lb/bu)

PA8346-7+	43.4	48.0	47.1	46.2
Maury	44.9	47.3	47.2	46.5
Pennrad	45.1	46.9	47.2	47.2
Barsoy	46.7	48.9	--	47.8
Post	--	49.8	--	--
LSD (.05)	1.0	0.8	1.1	

PLANT HEIGHT (in)

PA8346-7+	37	31	30	33
Maury	39	32	32	34
Pennrad	42	37	36	38
Barsoy	37	31	--	34
Post	--	35	--	--
LSD (.05)	2	2	3	

DISEASE (1985)

	Net blotch		Rust	Spot blotch
	----------%----------			
PA8346-7+	6	12.9	0.1	0.3
Maury	13	20.6	0.1	1.0
Pennrad	18	23.0	0.2	0.0
Barsoy	18	--	0.8	3.5
Post	0	--	0.2	3.2
LSD (.05)	9	13.4	0.3	6.1

+ PA8346-7 is Pennco.

TABLE 3.
Summary of performance of winter barley varieties evaluated in Virginia in 1984-85.

	Yield (bu/A)				Bu. wt.	Height	Lodging
Variety	Blacksburg	Warsaw	Painter	Average	(lbs)	(in)	(%)
PA8346-7 +	69.4	89.2	106.7	88.4	47.1	34	22
Maury	46.8	80.0	99.1	75.3	46.5	33	20
Barsoy	47.5	94.8	87.3	76.5	50.6	34	8
Post	42.6	70.6	85.6	66.3	48.1	31	20
Surry	26.6	80.0	109.5	72.0	45.9	35	33
Henry	42.6	82.8	107.2	77.5	48.7	34	24
Sussex	56.9	94.1	110.9	87.3	46.9	36	19
Anson	63.1	99.9	82.6	81.9	47.1	36	28
LSD (.05)	13.5	10.8	13.7	--	--	2	--

Variety	Winter survival (%)	Net blotch (%)	Powdery mildew (%)	Scald (%)	Date headed
PA8346-7 +	99	3.2	T	0	April 26
Maury	98	6.5	0	T	April 28
Barsoy	92	0.8	32	0	April 22
Post	93	0.2	1	0	April 31
Surry	72	7.8	0	0	April 25
Henry	92	4.8	1	0	April 27
Sussex	59	3.3	0	0	April 23
Anson	90	0.0	34	2	April 28
LSD (.05)	7	1.2	--	--	--

+ PA8346-7 is Pennco.

TABLE 4.

Summary of performance of winter barley varieties evaluated at Quantico, Queenstown and Clarksville, Maryland in 1985.

Variety	Yield (bu/A)	Bu. wt. (lb/bu)	Lodging (%)	Height (in)	Date headed	Survival (%)
PA8346-7+	121.5	43	20	33	April 27	98
Maury	128.1	43	24	37	April 28	100
Barsoy	123.1	48	25	37	April 22	100
Surry	119.7	44	9	37	April 24	100
Henry	124.9	45	21	36	April 27	100
Sussex	131.7	43	20	36	April 24	100
Anson	131.8	42	13	38	April 29	100

+ PA8346-7 is Pennco.

EXHIBIT-E, Statement of Basis of Applicant's Ownership.

'Pennco' winter barley was developed cooperatively at the Pennsylvania State University by Dr. Marvin L. Risius, Pennsylvania State University, and Dr. Harold G. Marshall, U. S. Department of Agriculture. By agreement, The Pennsylvania Agricultural Experiment Station seeks Plant Variety Protection for the variety, 'Pennco'.